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Assessing Nurses Knowledge on the Evaluation of Arrhythmias that Pose a Risk to Life

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Abstract:

Objective: The purpose of this research was to evaluate the level of expertise of the nursing staff members working in the intensive care unit (ICU) and critical care unit (CCU) at Mayo Hospital, Lahore, Pakistan

Methods: The research was conducted in a cross-sectional manner. The participants were found using a practical sampling strategy that has been used for the previous six months in intensive care units (ICUs) and critical care units (CCUs). This study was conducted between October 2022 and March 2023. Data were gathered using the life-threatening arrhythmias questionnaire, and SPSS version 26 was used for analysis.

Results: The majority of attendees were graduates and staff with diplomas. Participants received basic life support training in 46% of cases, advanced cardiovascular life support training in 14% of cases, and no training in 32% of cases. 86% of the participants had little to no awareness of the life-threatening arrhythmias.

Conclusions: In our research, we found that the majority of nursing staff members were incapable to spot patients who were in danger of losing their lives. To raise staff understanding and have a direct impact on the hospital mortality rate, nursing staff in the critical care unit have to improve their academic and ECG training.

Keywords: nursing, arrhythmias, intensive care unit

Introduction:

After ischemia or an imbalance of electrolytes, arrhythmias are one of the frequent presentations to critical units; an arrhythmia is any rhythm other than sinus rhythm. The nursing staff, who are the first responders to a CCU or ICU setting, are the ones who are most likely to be saved by an early interpretation of an arrhythmia. When using a monitor or ECG, patients either present with arrhythmias or acquire aberrant rhythms [1,2]. If the nursing staff can distinguish between rhythms that are critically harmful and identify atypical rhythms, they can treat rhythms promptly and appropriately, thereby affecting the possibility of saving lives. Arrhythmias are irregular heartbeats that disrupt the heart's natural conduction system and, if not treated quickly, may be fatal. Arrhythmias have a direct impact on the heart's pumping action, which lowers cardiac output. These are the only available ECG or cardiac monitor instruments to identify this

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rhythm. These arrhythmias, which are often seen in critical units and significantly increase the risk of death, include ventricular fibrillation, atrial fibrillation, ventricular tachycardia, and total heart block [3-5]. Ventricular fibrillation, the most common arrhythmia that results in sudden cardiac death, is one of the cardiac arrhythmias that must be managed quickly to save lives [6.7]. Cardiac arrhythmias are the most prevalent contributing factor to fatality in the index society by 2027 and are responsible for thousands of deaths worldwide due to sudden cardiac death. In South Asia, Pakistan possesses a few of the highest rates of heart disease and heart disease-related mortality [8]. Alcohol, cigarette use, obesity, and gender are all co-factors in heart disease [9–12]. Nursing staff in critical units are important and vital people to save the life by identifying life-threatening arrhythmias and performing cardiopulmonary resuscitation (CPR)15 in this situation. Other variables such rheumatic heart disease and Ischemia [13,14].

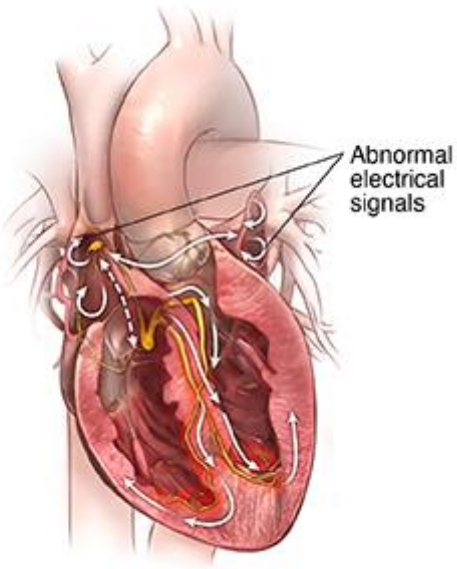

Figure 1: Arrhythmias

In underdeveloped nations, particularly in South Asia [16,17], there are differences in resuscitation knowledge and competence. The death rate may be significantly reduced by doing CPR well, and this can be done by implementing programs to increase hospital capacity or continuing medical education. The most used method for finding arrhythmias nowadays is an ECG trace [18,19]. The nurses virtually have to intervene in this situation to save the patient's life, hence ECG interpretation of life-threatening arrhythmias is crucial for nursing staff in critical units to reduce hospitalized patients' death rates.

Methods:

Study Design: From October 2022 to March 2023, Mayo Hospital in Lahore, Pakistan, conducted this descriptive cross-sectional research. The study's goal was to measure 50 nurses' degrees of expertise in critical care units' life-threatening arrhythmias. Specifically for the research, questions were developed to evaluate the nursing staff's expertise. All subjects gave their informed permission before agreeing to

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participate in the study, which was authorized by the hospital's cardiology department.

Statistical Analysis: Version 26 of SPSS was used to analyze the data that was gathered. To ascertain how much the nursing staff knew about life-threatening arrhythmias, descriptive analysis was used. The goal of the research was to uncover knowledge gaps and potential areas for strengthening the nursing staff's training.

Results:

The information provided is an analysis of research that was conducted to see how much the nursing staff in intensive care units knew about life-threatening arrhythmias. 50 people took part in the research; their ages ranged from 20 to 50, with a standard deviation of ±7.49. Participants' ages ranged from 22 to 52, with 52 being the youngest. 50 people were included, and 28% of them were men and 72% were women. Only 2% of the participants had an MSN degree; 62% had diplomas, 36% had degrees, and the remaining participants were all diploma holders.

Table 1: Demographic information of the participants included in the study

	N	**%**
Gender		
Female	36	72%
Male	14	28%
Level of Education		
MSN	1	2%
Graduate	18	36%
Diploma Holder	31	62%
Working Area		
HDU	18	36%
CCU	11	22%
ICU	21	42%
Training Type		
ACLS	4	14%
BLS	23	46%
None	16	32%

42% of participants worked in the intensive care unit, 22% in the critical care unit, and 36% in the housing and dwelling unit. About the type of training they had received, 46% had BLS training, 14% had ACLS training, and 32% had none at all. (Table 1)

The paper also details the awareness of certain life-threatening arrhythmias among the participants. For all potentially fatal arrhythmias, 17.6% of responses were accurate. A table showing the frequency and percentage of accurate responses for each kind of arrhythmia is then included in the report.

Table 2: Evaluation of Nursing Staff's Awareness Regarding Life-Threatening Arrhythmias

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		N	%	Cumm (%)
Sinus Tachycardia	Atrial Tachycardia	13	26	26
	Ventricular Tachycardia	6	12	38
	Sinus Tachycardia	7	14	52
	Supraventricular Tachycardia	24	48	100
Ventricular Fibrillation	Sinus Tachycardia	1	2	2
	Atrial Tachycardia	2	4	6
	Ventricular Fibrillation	17	34	40
	Ventricular Tachycardia	30	60	100
Ventricular Tachycardia	Sinus Tachycardia	2	4	4
	Atrial Tachycardia	6	12	16
	Ventricular Fibrillation	16	32	48
	Ventricular Tachycardia	26	52	100
Cardiac Arrest	AV Block	2	4	4
	Complete Heart Block	9	18	22
	Sinus Bradycardia	8	16	38
	Cardiac Arrest	31	62	100
Complete Heart Block	First Degree Heart Block	18	36	36
	Complete Degree Heart Block	16	32	68
	Second Degree Heart Block	8	16	84
	Sinus Bradycardia	8	16	100

According to Table 2, 32% of participants correctly answered the question about first-degree heart block, while 36% of participants correctly answered the question about full heart block. 16% of individuals correctly identified sinus bradycardia, compared to 62% of people who correctly identified cardiac arrest. Only 4% of people correctly answered the question about an AV block whereas 16% did so for second-degree heart block.

52% of participants correctly identified ventricular tachycardia whereas only 32% correctly identified ventricular fibrillation about ventricular tachycardia. Only 4% correctly answered the question about sinus tachycardia while only 12% correctly answered the question about atrial tachycardia. A further measure of the participants' general comprehension of each kind of arrhythmia is shown in Table 2 by the cumulative percentage of right responses for each arrhythmia.

Discussions:

Diverse degrees of nursing staff expertise in assessing life-threatening arrhythmias have been found in the prior study. In one research, participants were found to be able to identify crucial rhythms and follow the defibrillation procedure to a score of 68%, [20] while in another, critical care nurses were shown to be able to identify the right rhythms in life-threatening conditions to a score of 69%. [21] Higher levels of training and knowledge among

nursing professionals have been documented by several research. According to research, for instance, almost 88% of nurses were able to recognize and had a good degree of understanding of cardiology. The majority of the critical care nurses had also attended ECG training courses. [22] According to another study, most critical care nurses had a strong understanding of cardiac arrhythmias and could recognize life-threatening rhythms, however, there were significant knowledge gaps, notably in the areas of management and therapy. [23] According to different research, nurses who regularly received ECG training had much better knowledge ratings and felt more capable of identifying and treating life-threatening arrhythmias. A study of nurses working in a cardiac care unit revealed that those who had received specialized training in cardiac arrhythmias scored much better on knowledge tests than those who had not. [24]

The majority of emergency department nurses had a solid understanding of basic ECG interpretation, but considerable gaps existed in their knowledge of how to identify and treat more complicated arrhythmias, demonstrating the need for continued training and education. A survey of nurses working in critical care units revealed that while the majority of the nurses felt confident in their ability to recognize and treat life-threatening arrhythmias, only a small percentage of the nurses did. This finding suggests that ongoing training and support are required to increase knowledge and confidence levels. [25]

According to another survey, the majority of nursing staff members score very well in terms of their understanding of arrhythmias and best practices for critical care, as well as having a high level of knowledge and practical experience. [26] In contrast to the research that was published, which found that 68% of participants could identify crucial rhythms and follow defibrillator instructions, [27] our study found that only 17.6% of nursing staff could accurately identify rhythms and that 83.4% of participants were unable to do so. Another research on this subject found that 93.8% of nurses were graduates and that 69% of participants could recognize the right rhythm in a scenario when life was at risk. [28] The majority of nurses in critical care also had ECG training. The majority of the nurses in our research had diplomas, but in critical care units, the nursing staff receives non-ECG training. In contrast to this research, which found that 88% of nurses were able to identify patients and had high levels of cardiology knowledge, [29] our study participants had low to moderate levels of knowledge, which is why the proportion of participants who gave the right response was low.

Nevertheless, the research mentioned in the section above discovered that the majority of nursing personnel only had diplomas and no ECG training, which may have contributed to their lower levels of expertise and their inability to identify significant arrhythmias. As a result of the nursing staff being overworked, the absence of an ECG workshop, and inadequate academic qualifications, we have noted a dearth of nursing expertise in the area of cardiac arrhythmias.

A single public teaching hospital served as the site of the investigation. ICU, CCU, and HDU registered nurses made up the study's target group. A drawback of the experiment was a lack of time, fewer research hours, and a significant number of clinical hours.

Conclusions:

Most nursing staff members struggled to identify patients whose rhythms were in danger of dying. A serious problem that has to be addressed right now is the nursing staff's incapacity to spot patients' rhythms that might end their lives. The results indicate that improving the academic credentials and giving ECG training to the nursing staff in critical care units might greatly

boost their knowledge and abilities in this area, consequently lowering the hospital death rate. To guarantee the delivery of high-quality care to patients, healthcare organizations must give priority to the training and education of their nursing staff. Hospitals may not only improve patient outcomes by investing in the professional development of their nursing staff, but they can also strengthen their standing as a center of excellence for healthcare. Hospitals are advised to take the appropriate action to solve this problem and provide their nursing staff with the tools and instruction they need to advance their knowledge and abilities.

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